

TTTTTTTTTT1 EEEEEEEEEE CCCCCCCCCC 000000 LL BBBBBBBB RRRRRRRR
TTTTTTTTTTT EEEEEEEEEE CCCCCCCCCC 000000 LL BBBBBBBB RRRRRRRR
TT EE CC 00 00 LL B B B B RR RR RR
TT EE CC 00 00 LL B B B B RR RR RR
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TT EEEEEEEE CC 00 00 LL BBBBBBBB RRRRRRRR
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TT EE CC 00 00 LL B B B B RR RR RR
TT EEEEEEEE CCCCCCCCCC 000000 LLLLLLLL BBBBBBBB RR RR
TT EEEEEEEE CCCCCCCCCC 000000 LLLLLLLL BBBBBBBB RR RR

The diagram consists of a 10x10 grid of 100 cells. The cells are filled with the letters 'L', 'I', 'S', and 'T' in a specific pattern. The pattern includes a central vertical column of 'I' cells, a diagonal band of 'S' cells, and a bottom row of 'L' cells. The 'I' cells are arranged in a 10x10 grid, with the top cell being empty. The 'S' cells are arranged in a diagonal band, with the top cell being empty. The 'L' cells are arranged in a bottom row, with the top cell being empty. The 'T' cells are arranged in a top row, with the top cell being empty.

(1) 27 TECO's HELP command, etc.

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0000 1 .TITLE TECOLBR TECO's HELP command, etc.
0000 2 .IDENT /V39.00/
0000 3 ;*****
0000 4 ;*****
0000 5 ;*****
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0000 23 ;*
0000 24 ;*
0000 25 ;*****
0000 26
0000 27 .SBTTL TECO's HELP command, etc.
0000 28
0000 29 ; Last edit on 27-Jul-1983 by Mark Bramhall
0000 30
0000 31     $HLDEF                      ; Librarian's HELP definitions
0000 32     $LBRDEF                     ; Librarian definitions
0000 33
0000 34 MAX_KEYS      =      10          ; Maximum number of keys allowed
0000 35
0000 36 LIB_NAME_MAX =      255         ; Maximum size of a library name
0000 37
0000 38 RNS_NAME_MAX =      255         ; Maximum size of a resultant name
0000 39
0000 40 .DEFAULT DISPLACEMENT WORD      ; 16 bits should always reach
0000 41
0000 42 .SHOW MEB
0000 43
0000 44 .PSECT TECOEXELBR, PAGE,NOPIC,USR,OVR,REL,GBL, SHR, EXE, RD, NOWRT
0000 45
0000 46     TSTL   R0
0000 47     BLSS   40$                      ; Error message printing call (-1)?
0000 48     TSTW   B^INDIR(R11)           ; Yes
0000 49     BNEQ   20$                      ; Active indirect command file?
0000 50     MOVZWL W^QPNTR(R11), R6      ; Yep, do nothing
0000 51     BEQL   30$                      ; Get the size of the command line
0000 52     CMPB   R0 #27                  ; Can't be a HELP command
0000 53     BEQL   10$                      ; An ESCape?
0000 54     CMPB   R0 #10                  ; Yep, go check for 2 ESCapes
0000 55     BNEQ   20$                      ; A LF?
0000 56     MOVZBL #13, R0                  ; Nope
0000 57     CMPW   B^TEMP(R11), R0      ; Yep, check for CR/LF combination
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57 00'AB	1E	12 0021	58	BNEQ	20\$: No	
57 00'AB		3C 0023	59	MOVZWL	B^QRSTOR(R11), R7	Get base of Q-register storage	
57 56		A0 0027	60	ADDW	B^QZ(R11), R7	and add in the inuse amount	
51 87		C2 002B	61	SUBL	R6, R7	then back up by command's length	
51 2020		D0 002E	62	MOVL	(R7)+, R1	Get first four command characters	
504C4548	8F	CA 0031	63	BICL	#3208!3208!3208!32, R1	and (dirty) convert to upper case	
51		D1 0038	64	CMPL	R1, #^A/HELP/	Is this a HELP command?	
6F		13 003F	65	BEQL	50\$	Yes	
50		7C 0041	66	CLRQ	R0	Say nothing happened	
		05 0043	67	RSB		and exit	
2F 50		91 0044	68	CMPB	R0, #^A'/'	A slash?	
F8		12 0047	69	30\$:	20\$	Nope	
00'AB		B5 0049	70	BNEQ	B^ERRPOS(R11)	Recovering from an error?	
F3		15 004C	71	TSTW	20\$	Nope again	
005C'CF	0242'CF	9E 004E	72	BLEQ	230\$, PRINT_ROUT	Set a special print routine	
0253'CF	01	7F 0055	73	40\$:	PUSHAQ	250\$	Set a null line
0000'CF	00	FB 0059	74	CALLS	#1, TEC\$OUT_ASCID	and go output it	
6E 00		2C 005E	75	MOVCS	#0, (SP), #0, #MAX_KEYS*8, KEY_DESC ; Clear out key descs		
0000'CF		0065	76				
0050'CF	025B'CF	7D 0068	77	MOVQ	260\$, LIB_DESC	Set library name to TECO	
0000'CF	0267'CF	7D 006F	78	MOVQ	270\$, KEY_DESC	Set key #1 to ERRORS	
0008'CF	03	DO 0076	79	MOVL	#3, KEY_DESC+8	Key #2 will be length 3	
52 026F'CF		9E 007B	80	MOVAB	ERROR_CODE, R2	Get pointer to error code spot	
0000'CF	62	9E 0080	81	MOVAB	(R2), KEY_DESC+8+4	and set it into key #2	
50 00000000'EF		3C 0085	82	MOVZWL	L^ERRCOD, R0	Get the RAD50 code into low order	
51		D4 008C	83	CLRL	R1	and clear a high order	
51	50 00000640'8F	78 008E	84	EDIV	#40*40, R0, R1, R0	Divide for the first character	
82 51 40'8F		81 0097	85	ADDB3	#^A/A/-1, R1, (R2)+	and set it	
51		D4 009C	86	CLRL	R1	Clear a high order	
50 51 50 28		78 009E	87	EDIV	#40, R0, R1, R0	and divide for 2nd and 3rd	
82 51 40'8F		81 00A3	88	ADDB3	#^A/A/-1, R1, (R2)+	Set the second character	
82 50 40'8F		81 00A8	89	ADDB3	#^A/A/-1, R0, (R2)+	and the third	
00C5		31 00AD	90	BRW	170\$	Go print the error message help	
0000'CF	56 05	C2 00B0	91	00B0	92 50\$:		
005C'CF	0000'CF	9E 00B3	93	SUBL	#4+1, R6	Remove HELP (4) and ESCape or CR (1)	
0D 50		91 00BA	94	MOVAB	TEC\$OUT_ASCID, PRINT_ROUT	Set the standard print routine	
09		13 00BD	95	CMPB	R0, #13	Was this the CR/LF entry?	
0253'CF	0000'CF	7F 00BF	96	BEQL	60\$	Yes	
0000'CF	01	FB 00C3	97	PUSHAQ	250\$	No, ESCape, set a null line	
00 6E 00		2C 00C8	98	CALLS	#1, TEC\$OUT_ASCID	and go output it	
0000'CF		00CF	99	MOVCS	#0, (SP), #0, #MAX_KEYS*8, KEY_DESC ; Clear out key descs		
54 FFF8'CF		7E 00D2	100	MOVAB	KEY_DESC-8, R4	Start a (biased) key desc pointer	
54 08		C0 00D7	101	ADDL	#8, R4	Bump to the next key descriptor	
04 A4 67		9E 00DA	102	MOVAB	(R7), 4(R4)	Set pointer to key in descriptor	
56 07		00DE	103	DECL	R6	More command line to look at?	
33 19		00EO	104	BLSS	130\$	Nope, done	
20 87		00E2	105	CMPB	(R7)+, #32	Is this a <SP> or lower?	
21 18		00E5	106	BLEQU	110\$	Yes, end of key (or ignoring junk)	
64 D6		00E7	107	INCL	(R4)	Count a key character in desc	
61 8F 77		91 00E9	108	CMPB	-(R7), #^A/A/+32	A possible lower case character?	
09 1F		00ED	109	BLSSU	100\$	No	
7A 8F 67		91 00EF	110	CMPB	(R7), #^A/Z/+32	Might be?	
03 1A		00F3	111	BGTRU	100\$	But it isn't...	
67 20 8A		00F5	112	BICB	#32, (R7)	Convert lower case into upper case	
2F 87		91 00F8	100\$:	CMPB	(R7)+, #^A'/'	A slash ('/') for another key?	

01 E1 12 00FB 113 BNEQ 90\$: Nope, loop for more...
 64 D1 00FD 114 CMPL (R4), #1 : Yep, only thing in the key?
 DC 13 0100 115 BEQL 90\$: Just continue if only slash so far
 64 D7 0102 116 DECL (R4) : Else remove the slash from old key
 56 D6 0104 117 INCL R6 : Put the slash back into the count
 57 D7 0106 118 DECL R7 : and back up pointer over it
 64 D5 0108 119 110\$: TSTL (R4) : Are we within a key?
 CE 13 010A 120 BEQL 80\$: No, so don't start a new key
 00000048'8F 54 D1 010C 121 120\$: CMPL R4 #KEY_DESC+<<MAX_KEYS-1>>*8> ; Too many keys?
 0004'DF 0000'CF 3D 3A 0115 122 BLSSU 70\$: No, loop for the next key...
 4F 13 011D 123 130\$: LOCC #^A/=, KEY_DESC, @KEY_DESC+4 ; Find any equals separator
 50 0000'CF 56 50 7D 011F 124 BEQL 160\$: None
 0275'CF 0004'DF 50 29 0122 125 MOVQ R0, R6 : Save length and pointer to remainder
 50 0000'CF 56 50 C3 0122 126 SUBL3 R0, KEY_DESC, R0 : Find size before the equals
 3D 29 0128 127 CMPC R0, @KEY_DESC+4, 280\$: Is it really /LIBRARY?
 0000'CF 0008'CF 0048 8F 28 0132 128 BNEQ 160\$: Nope
 63 7C 013C 129 MOVC #<MAX_KEYS-1>>*8, KEY_DESC+8, KEY_DESC ; Shuffle up key descs
 57 D6 013E 130 CLRQ (R3) : and clear the last one
 56 D7 0140 131 INCL R7 : Bump pointer over the equals
 05 12 0142 132 DECL R6 : and remove the equals from length
 56 027D'CF 7D 0144 133 BNEQ 140\$: A real library name remains
 0050'CF 56 7D 0149 134 MOVQ 290\$, R6 : Else use the default default name
 3D 67 91 014E 135 140\$: MOVQ R6, LIB_DESC : Set the new library name into desc
 22 12 0151 136 CMPB (R7), #^A/= : Making this library name permanent?
 57 D6 0153 137 BNEQ 170\$: No
 56 D7 0155 138 INCL R7 : Yes, bump pointer over 2nd equals
 05 12 0157 139 DECL R6 : and remove it from length
 56 027D'CF 7D 0159 141 BNEQ 150\$: A real library name is still there
 00FF 8F 00 67 56 2C 015E 142 150\$: MOVQ 290\$, R6 : Else set the default default name
 0064'DF 0165 150\$: MOVC5 R6, (R7), #0, #LIB_NAME_MAX, @DEF_LIB_DESC+4 ; Load new name
 0060'CF 51 57 C3 0168 143 SUBL3 R7, R1, DEF_LIB_DESC : Set default name descriptor length
 0050'CF 0060'CF 7D 016E 144 160\$: MOVQ DEF_LIB_DESC, LIB_DESC : Default the library name
 04 0050'CF D1 0175 145 170\$: CMPL LIB_DESC, #4 : Is the library name exactly 4 chars?
 504C4548 8F 0054'DF 01 017C 146 BNEQ 180\$: Nope
 07 12 017A 147 CMPL @LIB_DESC+4, #^A/HELP/ : Really want system HELP library?
 0050'CF 0289'CF 7D 0187 149 BNEQ 180\$: No
 0168'CF 0168'CF 04 018E 150 180\$: CLRL RNS_DESC : Yes, be good and update the name
 029C'CF DF 0192 151 PUSHAL 320\$: Say no resultant name yet...
 0298'CF DF 0196 152 PUSHAL 310\$: Arg #3 is the library type (HELP)
 0058'CF DF 019A 153 PUSHAL LIB_INDEX : Arg #2 is the access mode (read)
 00000000'GF 03 FB 019E 154 CALLS #3, G^LBR\$INI_CONTROL : Arg #1 is the librarian's index
 0168'CF 55 50 E9 01A5 155 BLBC R0, 190\$: Init the library access
 00FF 8F 3C 01A8 156 MOVZWL #RNS_NAME_MAX, RNS_DESC : Abort if any error
 0168'CF 3F 01AF 157 PUSHAW RNS_DESC : Reset the resultant name descriptor
 0168'CF 7F 01B3 158 PUSHAQ RNS_DESC : Arg #7 is the resultant name length
 00 DD 01B7 159 PUSHL #0 : Arg #6 is the resultant file name
 02A0'CF 7F 01B9 160 PUSHAQ 330\$: Arg #5 is the related name
 00 DD 01BD 161 PUSHL #0 : Arg #4 is the default file name
 0050'CF 7F 01BF 162 PUSHAQ LIB_DESC : Arg #3 is the create option
 0058'CF DF 01C3 163 PUSHAL LIB_INDEX : Arg #2 is the library file name
 00000000'GF 07 FB 01C7 164 CALLS #7, G^LBR\$OPEN : Arg #1 is the librarian's index
 2C 50 E9 01CE 165 BLBC R0, 190\$: Open the library
 50 0050'CF 7E 01D1 166 MOVAQ KEY_DESC+<MAX_KEYS*8>, R0 : Abort if any error
 01D6 167 .REPT MAX_KEYS : Point to the key descriptor array
 01D6 168 PUSRAQ -(R0) : Arg #n is one of the key's

01D6 169 .ENDR : MAX KEYS

70 7F 01D6 PUSHAQ -(R0)
 70 7F 01D8 PUSHAQ -(R0)
 70 7F 01DA PUSHAQ -(R0)
 70 7F 01DC PUSHAQ -(R0)
 70 7F 01DE PUSHAQ -(R0)
 70 7F 01EO PUSHAQ -(R0)
 70 7F 01E2 PUSHAQ -(R0)
 70 7F 01E4 PUSHAQ -(R0)
 70 7F 01E6 PUSHAQ -(R0)
 70 7F 01E8 PUSHAQ -(R0)

00 DD 01EA 170 PUSHL #0
 005C'CF DD 01EC 171 PUSHL PRINT_ROUT
 00 DD 01FO 172 PUSHL #0
 0058'CF DF 01F2 173 PUSHAL LIB_INDEX
 00000000'GF 0E FB 01F6 174 CALLS #4+MAX KEYS, G^LBR\$GET_HELP ; Go print the HELP information
 51 00000000'GF DO 01FD 175 190\$: MOVL G^LBR\$GL_RMSSTV, R1 ; Save any RMS STV value
 56 50 7D 0204 176 MOVQ R0, R6 ; Save the final exit status
 0058'CF DF 0207 177 PUSHAL LIB_INDEX ; Arg #1 is the Librarian's index
 00000000'GF 01 FB 020B 178 CALLS #1, G^LBR\$CLOSE ; Close the library
 0A 56 E9 0212 179 BLBC R6, 200\$; Use previous error if any
 56 50 DO 0215 180 MOVL R0, R6 ; Else use the status we just got
 57 00000000'GF DO 0218 181 MOVL G^LBR\$GL_RMSSTV, R7 ; with any RMS STV value
 1C 56 E8 021F 182 200\$: BLBS R6, 220\$; Was everything successful?
 50 0168'CF 7D 0222 183 MOVQ RNS_DESC, R0 ; Get the resultant name descriptor
 50 B5 0227 184 TSTW R0 ; Anything there?
 05 12 0229 185 BNEQ 210\$; Yes, so use it
 FFFE'8F 50 0050'CF 7D 0228 186 MOVQ LIB_DESC, R0 ; No, use the library name descriptor
 00 61 50 2C 0230 187 210\$: MOVC5 R0, -(R1), #0, #FILSIZ-1-1, L^FILSRT ; Load the filename buffer

00000000'EF 0237 63 94 023C 188 CLRB (R3) ; making sure that it's ASCIZ
 50 56 7D 023E 189 220\$: MOVQ R6, R0 ; Set the final exit status
 05 0241 190 RSB ; and exit

06 50 01 0000 0242 192 230\$: .WORD ^M<> ; Error message print routine
 08 BC D3 0244 193 MOVL #1, R0 ; Preset success
 0247 194 BITL @HPLSL_FLAGS+4(AP), - ; Check for
 0248 195 #HPLSM_KEYNAMLIN!- ; a keyword name line
 0248 196 #HPLSM_OTHERINFO ; or additional information
 0000'CF 05 12 0248 197 BNEQ 240\$; Suppress either of those
 6C FA 024D 198 CALLG (AP), TEC\$OUT_ASCID ; Else go print the information
 04 0252 199 240\$: RET ; Return

0000025B'010E0000' 0253 200 .ASCID // ; A null descriptor
 025B 201 250\$: .ASCID /TECO/ ; Library name for error message help
 025B 202 260\$: .ASCID /ERRORS/ ; Key #1 for error message help
 53 52 4F 52 52 45 0000026F'010E0000' 0267 205 270\$: .ASCID /LIBRARY/ ; /LIBRARY qualifier
 0275 206 027D 207 280\$: .ASCII '/LIBRARY' ; Default default library name
 4F 43 45 54 00000285'010E0000' 027D 208 290\$: .ASCID /TECO/ ; System HELP library's real name
 0289 209 290\$: .ASCID /HELPLIB/ ; Access is for read
 49 4C 50 4C 45 48 00000291'010E0000' 0289 210 300\$: .ASCID /HELPLIB/ ; Access is for read
 42 0297 211 300\$: .ASCID /HELPLIB/ ; Access is for read
 00000001 0298 212 310\$: .LONG LBR\$C_READ ; Access is for read

```

45 48 24 53 59 53 000002A8'010E0000' 029C 214
42 4C 48 2E 3A 50 4C 029C 215 320$: .LONG LBR$C_TYP_HLP ; Library type is a HELP library
02A0 216
02A0 217 330$: .ASCID /SYSSHELP:.HLB/ ; Library's default file name string
02AE 218
02B5 219 .PSECT TECOCTL. QUAD,NOPIC,USR,CON,REL,LCL,NOSHR,NOEXE,RD, WRT
0000 220
0000 221 KEY_DESC:
0000 222 .BLKQ MAX_KEYS ; Key descriptors
0050 223
0050 224 LIB_DESC:
0050 225 .BLKQ ; Library name descriptor
0058 226
0058 227 LIB_INDEX:
0058 228 .BLKL ; Librarian's index
005C 229
005C 230 PRINT_ROUT:
005C 231 .BLKL ; Librarian output print routine addr
0060 232
0060 233 .ALIGN QUAD
0060 234
0060 235 DEF_LIB_DESC:
0060 236 .LONG 20$-10$, 10$ ; Default library name descriptor
0068 237
0068 238 10$: .ASCII /TECO/
00000167 006C 239 20$: .BLKB LIB_NAME_MAX-<20$-10$>
0167 240
0167 241 .ALIGN QUAD
0168 242
0168 243 RNS_DESC:
0168 244 .LONG 20$-10$, 10$ ; Resultant name descriptor
0170 245
0170 246 10$: .BLKB RNS_NAME_MAX
026F 247 20$:
026F 248
026F 249 ERROR_CODE:
026F 250 .BLKB 3 ; Holder for TECO's error code
0272 251
0272 252 .END

```

```

DEF_LIB_DESC      00000060 R  03
ERRCOD          ***** X  02
ERROR_CODE      0000026F R  03
ERRPOS          ***** X  02
FILSZ           ***** X  02
FILSRT          ***** X  02
HLP$L_FLAGS      = 00000004
HLP$M_KEYNAMLIN = 00000002
HLP$M_OTHERINFO = 00000004
INDIR          ***** X  02
KEY_DESC        00000000 R  03
LBR$CLOSE        ***** X  02
LBR$C READ       = 00000001
LBR$C TYP HLP     = 00000003
LBR$GET HELP     ***** X  02
LBR$GL RMSSTV     ***** X  02
LBR$INT CONTROL   ***** X  02
LBR$OPEN         ***** X  02
LIB_DESC         00000050 R  03
LIB_INDEX        00000058 R  03
LIB_NAME_MAX     = 000000FF
MAX_KEYS         = 000000A
PRINT_ROUT       0000005C R  03
QPNTR           ***** X  02
QRSTOR          ***** X  02
QZ               ***** X  02
RNS_DESC         00000168 R  03
RNS_NAME_MAX     = 000000FF
TEC$OUT_ASCID    ***** X  02
TEMP             ***** X  02

```

-----+
! Psect synopsis !
-----+

PSECT name

PSECT name	Allocation	PSECT No.	Attributes
ABS .	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
\$ABSS	00000000 (0.)	01 (1.)	NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE
TECOEXELBR	00000285 (693.)	02 (2.)	NOPIC USR OVR REL GBL SHR EXE RD NOWRT NOVEC PAGE
TECOCTL	00000272 (626.)	03 (3.)	NOPIC USR CON REL LCL NOSHR NOEXE RD WRT NOVEC QUAD

-----+
! Performance indicators !
-----+

Phase

Phase	Page faults	CPU Time	Elapsed Time
Initialization	37	00:00:00.08	00:00:00.39
Command processing	121	00:00:00.46	00:00:02.08
Pass 1	154	00:00:02.52	00:00:06.07
Symbol table sort	0	00:00:00.24	00:00:00.62
Pass 2	67	00:00:00.78	00:00:01.59
Symbol table output	5	00:00:00.04	00:00:00.04
Psect synopsis output	2	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	388	00:00:04.15	00:00:10.82

The working set limit was 1200 pages.
14966 bytes (30 pages) of virtual memory were used to buffer the intermediate code.
There were 20 pages of symbol table space allocated to hold 180 non-local and 37 local symbols.
252 source lines were read in Pass 1, producing 17 object records in Pass 2.
9 pages of virtual memory were used to define 8 macros.

```
+-----+  
! Macro library statistics !  
+-----+
```

Macro library name

_S255\$DUA28:[SYSLIB]STARLET.MLB;2

Macros defined

5

218 GETS were required to define 5 macros.

There were no errors, warnings or information messages.

MACRO/LIS=LISS:TECOLBR/OBJ=OBJ\$:TECOLBR MSRC\$:TECOLBR/UPDATE=(ENH\$:TECOLBR)

0399 AH-BT13A-SE
VAX/VMS V4.0

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